

A Novel Human Cell Line for Studies on Signaling and Endocrine Cancer

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Keywords: Research tool, cell line, PRKAR1A, cAMP signaling, R1alpha, PKA .

Summary:

The first known immortalized cell line with a naturally-occurring inactivating mutation in *PRKAR1A*, the regulatory subunit type 1A (R1alpha) of protein kinase A (PKA), which is associated with tumor formation.

PKA isozyme balance is critical for the control of cAMP signaling and related cell cycle and proliferation changes. Aberrant cAMP signaling has been linked to adrenocortical and other, mostly endocrine, tumors. Inactivating mutations in the *PRKAR1A* gene are a known cause of Carney Complex - an autosomal dominant multiple neoplasia syndrome associated with skin, heart, and other myxomas and a variety of endocrine tumors.

Potential Commercial Applications:

- Studies on multiple tumor formation associated with Carney Complex.
- Characterization of cAMP-mediated mechanisms of endocrine tumor formation.
- Studies of a large variety of cAMP-mediated processes in normal physiology and disease.

Competitive Advantages:

- First known immortalized cell line with a naturally-occurring inactivating mutation in the *PRKAR1A* gene.

Development Stage: Early stage, Discovery. *In vitro* data available.

Patent Status: Research material, patent protection is not being pursued for this technology.

Publications:

Nesterova M, et al. An immortalized human cell line bearing a PRKAR1A-inactivating mutation: effects of overexpression of the wild-type Allele and other protein kinase A subunits. *J Clin Endocrinol Metab.* 2008 Feb;93(2):565-71. [[PMID 18056771](https://pubmed.ncbi.nlm.nih.gov/18056771/)]

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